

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number
WO 2005/045830 A1

(51) International Patent Classification⁷: **G11B 20/10**
(21) International Application Number:
PCT/KR2004/001163
(22) International Filing Date: 17 May 2004 (17.05.2004)
(25) Filing Language: Korean
(26) Publication Language: English
(30) Priority Data:
10-2003-0079610

11 November 2003 (11.11.2003) KR

(71) Applicant (for all designated States except US): **COS-MOTAN INC.** [KR/KR]; 275-6, Yangjae-dong, Seocho-gu, Seoul 137-130 (KR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **CHOI, WonYong** [KR/KR]; 501-1002, Jugong APT., 6, Byeoryang-dong, Gwacheon-si, Gyeonggi-do 427-800 (KR).

(74) Agent: **PARK, HeeJin**; 401, Miele Haus Building, 607-10 Yeoksam-dong, Gangnam-gu, Seoul 135-080 (KR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

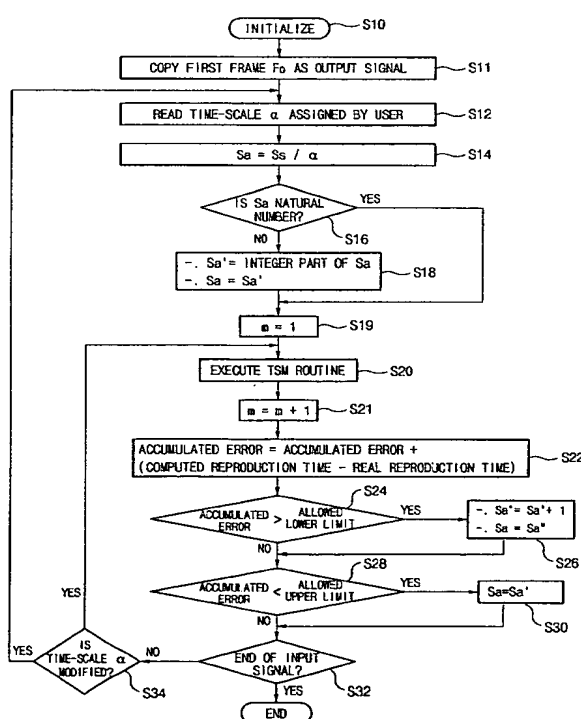
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: TIME-SCALE MODIFICATION METHOD FOR DIGITAL AUDIO SIGNAL AND DIGITAL AUDIO/VIDEO SIGNAL, AND VARIABLE SPEED REPRODUCING METHOD OF DIGITAL TELEVISION SIGNAL BY USING THE SAME METHOD



(57) Abstract: **Problem:** A method capable of ensuring a synchronization between an audio signal and a video signal both of which are modified in time-scale is needed. **Solution:** When analysis shift $S_a = S_s / \alpha$, where S_s is synthesis shift and α is a designated time-scale (variable speed ratio), has a decimal value, two natural numbers which are nearest to the decimal value are selected as a modified analysis shift S_a' and a compensated analysis shift S_a'' , respectively. In time-scale modification of source audio samples to vary playback speed by dividing them into overlapped successive analysis windows, the modified analysis shift S_a' and the compensated analysis shift S_a'' are alternately applied whenever a predetermined condition is met. The time difference between an estimated playback time and a real playback time of the time-scale modified audio signal is accumulated. The case that the predetermined condition is met is a case that an accumulated time difference goes beyond an upper threshold or a lower threshold of an allowed error range. In a processing of varying the playback speed of an AV signal, if a real variable speed ratio of a playback-speed-varied video signal is given as a target variable speed ratio of an audio signal to vary the playback speed of the audio signal, a synchronization between the video signal and the audio signal can be obtained. By applying this technology to the digital TV or TV phone, consecutive watch of the broadcasting signal for a phone-break time is possible. Catch-up for the currently received broadcasting signal is also possible through a high speed playback mode after a low speed playback mode initiated from a time of the past or the present.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.